

CLASS COPY DO NOT WRITE ON

Mole of Chalk Lab

Purpose:

- Visualize the concept of the mole
- Gain experience in calculating grams, molecules, atoms and moles

Activity

In this activity, you will visualize the concept of the mole using a mole of chalk as a model. You will practice calculations of moles and grams and gain a better understanding of what a mole is and how it applies to chemistry.

Materials

- Piece of chalk
- Digital balance
- Periodic table
- Calculator

Safety

Do not eat the chalk or draw anything inappropriate

Instructions (Please show your work for all calculations)

1. Obtain a piece of chalk and measure its mass in grams.
2. ~~Go outside~~ Using the black paper provided ~~and~~ draw a complete lab bench, electron dot structures of all the alkaline earth metals, periodic table, or anything you learned in chemistry ~~on the sidewalk~~.
3. ~~Return to class and~~ measure the mass of the unused chalk in grams.
4. Calculate how many grams of chalk you left out on the sidewalk.
5. Write the molecular formula for chalk (calcium carbonate)
6. Using the periodic table, determine the molar masses for each of the atoms in the chalk.
7. Write the chalk's molar mass. (How many grams of chalk equals one mole)
8. Use this data to calculate:
 - a. How many moles of chalk did you leave on the sidewalk?
 - b. How many molecules of chalk did you leave on the sidewalk?
 - c. How many atoms of calcium did you leave on the sidewalk?
 - d. How many atoms of carbon did you leave on the sidewalk?
 - e. How many atoms of oxygen did you leave on the sidewalk?

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- f. How many total atoms did you leave on the sidewalk?
9. What is the mass of one mole of calcium carbonate?
10. How many grams of calcium carbonate did you leave on the sidewalk?
- Is it less than a mole, equal to a mole or more than one mole?
11. How many grams of chalk were not used?
12. How many moles of chalk were not used?
13. How many molecules of calcium carbonate were not used?
14. How many atoms of calcium were not used?
15. How many atoms of carbon were not used?
16. How many atoms of oxygen were not used?
17. How many total atoms were not used?
18. Measure ,“weighout”, one mole of chalk. Mass of one mole in grams
- a) How many calcium carbonate molecules does one mole contain?
 - b) How many calcium atoms does it contain?
 - c) How many carbon atoms does it contain?
 - d) How many oxygen atoms does it contain?
 - e) What is the total number of atoms in one mole of calcium carbonate? (please show all work)
19. In your own words, define a mole and explain its importance.

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